Learning Objective: Students will be able to use a model and a formal rule to divide with mixed numbers.

Homework Answers

2.2 Record and Practice Journal

Complete the statement.

1. $\dfrac{3}{8} \times \underline{\dfrac{8}{3}} = 1$

2. $7 \times \underline{\dfrac{1}{7}} = 1$

3. $3 \div \underline{\dfrac{1}{12}} = 36$

4. $\dfrac{4}{9} \div \underline{\dfrac{1}{27}} = 12$

Evaluate the expression.

5. $\dfrac{1}{3} \div \dfrac{1}{6}$

   2

6. $\dfrac{3}{8} \div \dfrac{5}{8}$

   $\dfrac{3}{5}$

7. $6 \div \dfrac{2}{5}$

   15

8. $\dfrac{4}{9} \div \dfrac{2}{3} \div \dfrac{5}{6}$

   $\dfrac{4}{5}$

9. $\dfrac{1}{3} \div \dfrac{4}{7} \div \dfrac{3}{10}$

   $2\dfrac{5}{21}$

10. $\dfrac{7}{8} \bullet \dfrac{4}{5} \div \dfrac{7}{20}$

   2

11. In a jewelry store, rings make up $\dfrac{5}{9}$ of the inventory. Earrings make up $\dfrac{4}{15}$ of the inventory. How many times greater is the ring inventory than the earring inventory?

   $2\dfrac{1}{12}$

$\dfrac{5}{9} \div \dfrac{4}{15}$

$\dfrac{5}{9} \bullet \dfrac{15}{4} \div \dfrac{3}{12}$

$\dfrac{5}{3} \bullet \dfrac{5}{4} = \dfrac{25}{12}$

Learning Objective: Students will be able to use a model and a formal rule to divide with mixed numbers.

Lesson 2.3   November 5, 2014

Essential Question:

How can you model division by a mixed number?

Lesson 2.3

November 5, 2014

Lesson Objective:

Students will be able to:

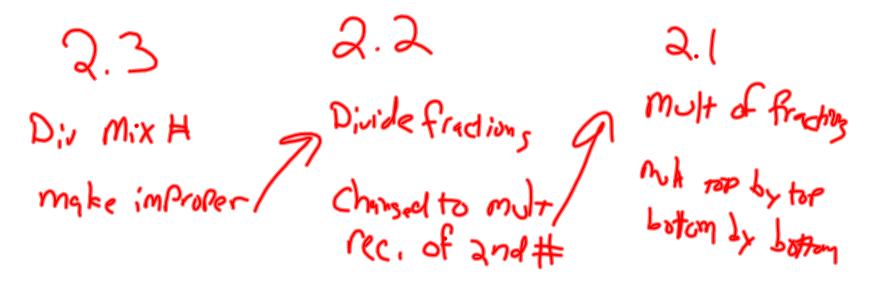use a model and a formal rule to divide with mixed numbers.

Self-Evaluation Scale

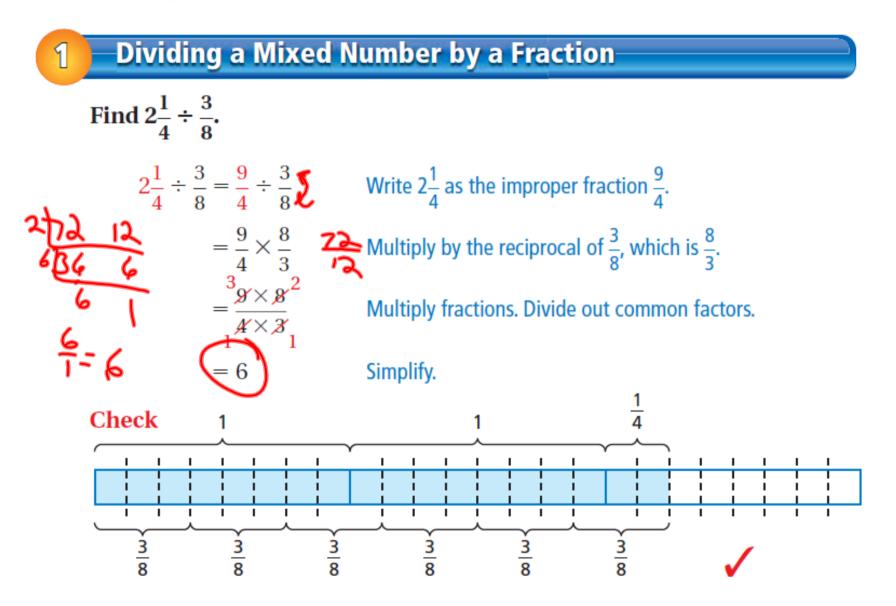| Score	Description
4	I can teach other students how to use a model and a formal rule to divide with mixed numbers.
3	I can use a model and a formal rule to divide with mixed numbers.
2	I recognize, but still need help to use a model and a formal rule to divide with mixed numbers.
1	I do not know how to use a model and a formal rule to divide with mixed numbers.

November 5, 2014 Period 3 Lesson 2.3

Learning Objective: Students will be able to use a model and a formal rule to divide with mixed numbers.

 Key Idea

Dividing Mixed Numbers

Write each mixed number as an improper fraction. Then divide as you would with proper fractions.

2.3

Div Mix #

make improper

2.2

Divide fractions

changed to mult

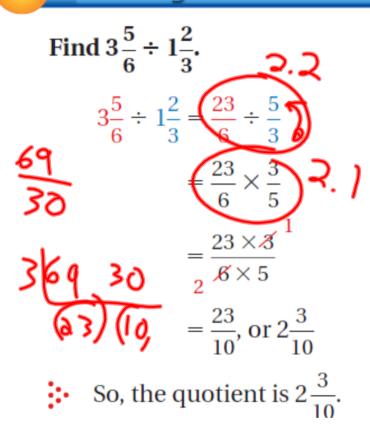rec. of 2nd #

2.1

mult of fractions

mult top by top

bottom by bottom

Learning Objective: Students will be able to use a model and a formal rule to divide with mixed numbers.

1 — Dividing a Mixed Number by a Fraction

Find $2\dfrac{1}{4} \div \dfrac{3}{8}$.

$$2\frac{1}{4} \div \frac{3}{8} = \frac{9}{4} \div \frac{3}{8}$$

Write $2\dfrac{1}{4}$ as the improper fraction $\dfrac{9}{4}$.

$$= \frac{9}{4} \times \frac{8}{3}$$

Multiply by the reciprocal of $\dfrac{3}{8}$, which is $\dfrac{8}{3}$.

$$= \frac{\overset{3}{\cancel{9}} \times \overset{2}{\cancel{8}}}{\cancel{4} \times \cancel{3}}$$

Multiply fractions. Divide out common factors.

$$= 6$$

Simplify.

Check

(handwritten annotations)
$2\overline{)72}$ 12
$6\overline{)36}$ 6
$\dfrac{6}{1}$
$\dfrac{6}{1} = 6$
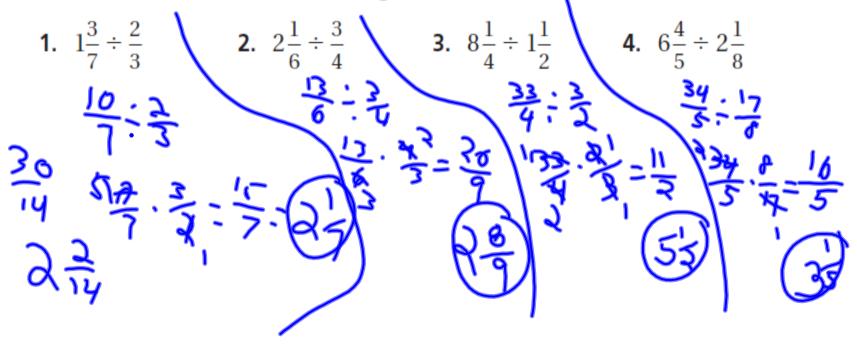
$2\dfrac{2}{12}$

Learning Objective: Students will be able to use a model and a formal rule to divide with mixed numbers.

2 Dividing Mixed Numbers

Find $3\dfrac{5}{6} \div 1\dfrac{2}{3}$.

2.2

$3\dfrac{5}{6} \div 1\dfrac{2}{3} = \dfrac{23}{6} \div \dfrac{5}{3}$

Estimate $4 \div 2 = 2$

Write each mixed number as an improper fraction.

$= \dfrac{23}{6} \times \dfrac{3}{5}$ 2.1

Multiply by the reciprocal of $\dfrac{5}{3}$, which is $\dfrac{3}{5}$.

$\dfrac{69}{30}$

$= \dfrac{23 \times \overset{1}{\cancel{3}}}{\underset{2}{\cancel{6}} \times 5}$

Multiply fractions. Divide out common factors.

$3\cancel{6}9 \quad 30$

$(23)(10)$

$= \dfrac{23}{10}$, or $2\dfrac{3}{10}$

Simplify.

$\therefore$ So, the quotient is $2\dfrac{3}{10}$.

Reasonable? $2\dfrac{3}{10} \approx 2$ ✓

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TOYO!

Tomei: On Your Own

Divide. Write the answer in simplest form.

1. $1\frac{3}{7} \div \frac{2}{3}$

$\frac{10}{7} \div \frac{2}{3}$

$\frac{30}{14}$

$\frac{10}{7} \cdot \frac{3}{2} = \frac{15}{7} = 2\frac{2}{14}$

2. $2\frac{1}{6} \div \frac{3}{4}$

$\frac{13}{6} \div \frac{3}{4}$

$\frac{13}{6} \cdot \frac{4}{3} = \frac{26}{9}$

$\boxed{2\frac{1}{9}}$

$\boxed{2\frac{8}{9}}$

3. $8\frac{1}{4} \div 1\frac{1}{2}$

$\frac{33}{4} \div \frac{3}{2}$

$\frac{33}{4} \cdot \frac{2}{3} = \frac{11}{2}$

$\boxed{5\frac{1}{2}}$

4. $6\frac{4}{5} \div 2\frac{1}{8}$

$\frac{34}{5} \div \frac{17}{8}$

$\frac{34}{5} \cdot \frac{8}{17} = \frac{16}{5}$

$\boxed{3\frac{1}{5}}$

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3 Using Order of Operations

Evaluate $5\frac{1}{4} \div 1\frac{1}{8} - \frac{2}{3}.$

$5\frac{1}{4} \div 1\frac{1}{8} - \frac{2}{3} = \frac{21}{4} \div \frac{9}{8} - \frac{2}{3}$ 　　Write each mixed number as an improper fraction.

$= \frac{21}{4} \times \frac{8}{9} - \frac{2}{3}$ 　　Multiply by the reciprocal of $\frac{9}{8}$, which is $\frac{8}{9}$.

$= \frac{\overset{7}{\cancel{21}} \times \overset{2}{\cancel{8}}}{\underset{1}{\cancel{4}} \times \underset{3}{\cancel{9}}} - \frac{2}{3}$ 　　Multiply $\frac{21}{4}$ and $\frac{8}{9}$. Divide out common factors.

$= \frac{14}{3} - \frac{2}{3}$ 　　Simplify.

$= \frac{12}{3}$, or 4 　　Subtract.

November 5, 2014 Period 3 Lesson 2.3

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4 Real-Life Application

One serving of tortilla soup is $1\frac{2}{3}$ cups. A restaurant cook makes 50 cups of soup. Is there enough to serve 35 people? Explain.

Divide 50 by $1\frac{2}{3}$ to find the number of available servings.

$$50 \div 1\frac{2}{3} = \frac{50}{1} \div \frac{5}{3}$$ Rewrite each number as an improper fraction.

$$= \frac{50}{1} \cdot \frac{3}{5}$$ Multiply by the reciprocal of $\frac{5}{3}$, which is $\frac{3}{5}$.

$$= \frac{\overset{10}{\cancel{50}} \cdot 3}{1 \cdot \underset{1}{\cancel{5}}}$$ Multiply fractions. Divide out common factors.

$$= 30$$ Simplify.

∴ No. Because 30 is less than 35, there is not enough soup to serve 35 people.

Learning Objective: Students will be able to use a model and a formal rule to divide with mixed numbers.

On Your Own

Evaluate the expression. Write the answer in simplest form.

5. $1\dfrac{1}{2} \div \dfrac{1}{6} - \dfrac{7}{8}$

6. $3\dfrac{1}{3} \div \dfrac{5}{6} + \dfrac{8}{9}$

7. $\dfrac{2}{5} + 2\dfrac{4}{5} \div 1\dfrac{3}{4}$

8. $\dfrac{2}{3} - 1\dfrac{4}{7} \div 4\dfrac{5}{7}$

9. In Example 4, can 30 cups of tortilla soup serve 15 people? Explain.

Learning Objective: Students will be able to use a model and a formal rule to divide with mixed numbers.

Assignment

Complete problems:

5, 10, 15, 20, 23, 24, 26, 30, 34, & 39

on pages 74 & 75 in your Big Ideas Text Book.

Learning Objective: Students will be able to use a model and a formal rule to divide with mixed numbers.

Lesson 2.3   November 5, 2014

Essential Question:

How can you model division by a mixed number?

Lesson 2.3

November 5, 2014

Lesson Objective:

Students will be able to:

use a model and a formal rule to divide with mixed numbers.

Self-Evaluation Scale

Score	Description
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November 5, 2014 Period 3 Lesson 2.3

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Homework

In your Big Ideas Record and Practice Journal page 42.